

### REMARKS

The applicants respectfully request reconsideration in view of the amendment and the following remarks. Support for newly added claim 53 can be found in claim 20. Support for newly added claim 54 can be found in the specification at page 34, lines 1-6. **The applicant authorizes the PTO to charge the applicant \$324.00 for the extra independent claim (\$220.00) and two extra total claims (\$104.00) added to this application.**

The Examiner maintained the rejection of Claims 20-26, 28-31 and 41-52 under 35 U.S.C. §103(a) over Formato. The applicants respectfully traverse this rejection.

The applicants have four independent claims (claims 20, 50, 52 and 53). Applicants submit that independent claims 20, 50, 52 and 53 are patentable in view of Formato. Claims 20, 50 and 52 are product by process claims and claim 53 is a process claim. As Applicants previously noted, M.P.E.P. §2113 states:

[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (Claim was directed to a novolac color developer. The process of making the developer was allowed. The difference between the inventive process and the prior art was the addition of metal oxide and carboxylic acid as separate ingredients instead of adding the more expensive pre-reacted metal carboxylate. The product-by-process claim was rejected because the end product, in both the prior art and the allowed process, ends up containing metal carboxylate. The fact that the metal carboxylate is not directly added, but is instead produced in-situ does not change the end product.).

**The structure implied by the process steps** should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the **product can only be defined** by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations.) (*Emphasis added.*)

In other words, if the material formed as a result of performing the steps recited in Claims 20, 50 and 52 is inevitably different from that of Formato, then the membranes of Claims 20, 50 and 52 are patentably distinct. As previously stated, these inevitable material differences are not required to be recited in the claims.

The Examiner in the middle of page 4 of the Office Action, directed Applicants to the teachings of Formato as described in column 17, lines 22-45. Applicants note that the referenced portion of Formato describes a “fourth preferred embodiment” (column 17, lines 22-27). It is further noted that Formato teaches that the porous substrate polymer used in the fourth preferred embodiment is produced as described in a “third preferred embodiment” (Formato, column 17, lines 30-32). The third preferred embodiment, in turn, is described in Formato, column 16, line 66 through column 17, line 21. In particular, Formato states (column 17, lines 2-8):

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A variety of methods exist for the fabrication of porous polymer films, most centered around dissolving a polymer within a water miscible solvent. A freshly cast film is then soaked in water causing the polymer to precipitate from solution. This phase separation of the solvent and the polymer causes the formation of the porous network as the solvent is leached into the water.

In other words, a portion of an internal volume of a slab (film) of a polymer is washed away, leaving voids (pores) in the bulk of the polymer. The general method of preparing the membranes is described in detail at column 12, lines 28-47 of Formato. Specifically, the substrate polymer is formed into film with high porosity (col. 12, lines 33-36), and then immersed in water, which leaches out solvent and coagulates polymer (col. 12, lines 36-39). This process forms voids (col. 12, line 40). Ion-conducting material is then introduced into these voids either by solvent-exchange process (column 12, lines 41-42), or by infiltrating a dry membrane (column 12, line 43). This description is consistent with FIG. 1, which is a schematic illustration of the process by which Formato’s membranes are prepared. (It is noted that an express description of FIG. 1 is not found in Formato.) It is clear from panel A of FIG. 1 that pores (i.e. the regions in which “voids” were formed by solvent leaching) are separate and distinct from the polymer (i.e. regions in which no “voids” were formed). From panel B of FIG. 1, it is clear that whether solvent-exchange or infiltration variant of the process of Formato is used, the ion-conducting material is within the pore, and is not within the polymer regions.

According to the fourth preferred embodiments of Formato which the Examiner refers to at page 4 line 7 of the office action, the voids within the polymer film are filled with monomer, which is then polymerized (column 17, lines 36-38).

In contrast, independent Claims 20, 50 and 52 define a product obtained by (a) mixing a polymer film (the *entire* polymer film rather than only a region of the film defined by voids in the polymer material) with a liquid that contains **both** vinyl-containing phosphonic acid monomers **and** vinyl-containing sulphonic acid monomers and (b) polymerizing the monomers in the liquid. Clearly, because the *entire bulk* of the polymer film recited in steps (a) of Claims 20, 50 and 52 are imbibed with the monomer solution, the *in situ* polymerization that takes place in steps (b) of Claims 20, 50, 52 and 53 will result in the *in situ* formed polymer(s) permeating the entirety of polymer film, rather than being limited to the void regions, as in Formato's material. Therefore, Formato's membranes are structurally different from the membranes defined by Claims 20, 50 and 52 and the process claim 53.

The Examiner acknowledges in the middle of page 4 of the Office Action that Formato does not "expressly exemplify the use of both type of monomers as the ion-conducting monomers". The Examiner then asserts,

[t]he examiner is of the position that it would have been obvious to one having ordinary skill in the art to employ both vinylphosphonic acid and vinylsulfonic acid ion conducting monomers for the expected additive result in light of their having been disclosed as suitable ion conducting monomer alternatives by patentees.

The applicants respectfully disagree. A statement that modifications of the prior art to meet the claimed invention would have been "obvious to one of ordinary skill in the art at the time the invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See MPEP § 2143.01 IV. "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007) quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Furthermore, the Examiner

cannot selectively pick and choose from the disclosed parameters without proper motivation as to a particular selection. The mere fact that a reference may be modified to reflect features of the claimed invention does not make the modification, and hence the claimed invention, obvious unless the prior art suggested the desirability of such modification. *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430 (Fed. Cir. 1990); *In re Fritch*, 23 USPQ2d 1780 (Fed. Cir. 1992). Thus, it is impermissible to simply engage in a hindsight reconstruction of the claimed invention where the reference itself provides no teaching as to why the applicant's combination would have been obvious. *In re Gorman*, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991).

Because Formato's membranes are produced by filling the pores (voids) in the substrate polymer with the second type of material, Formato neither teaches nor suggests a membrane in which the second type of material is permeating the entirety of the first polymer material, as is the case with the membranes defined by the pending claims. Furthermore, as Applicants argued in previous responses, Applicants' membranes possess unexpected advantages not disclosed or suggested by any of the cited references, including Formato. Specifically, Applicants' membranes show conductivity at very high temperatures, above the boiling point of water, and thus can function without moistening (see page 34, lines 1-6 of the English translation of the instant Application). For the above reasons, this rejection should be withdrawn.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

A two month extension has been paid. **The applicants authorize the PTO to charge the applicants \$324.00 for the extra independent claim (\$220.00) and two extra total claims (\$104.00) added to this application.** Applicants believe no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 15588-00032-US from which the undersigned is authorized to draw.

Dated: February 16, 2010

Respectfully submitted,

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